IN THE CLAIMS

Please amend the claims to read as follows:

Listing of Claims

1. (Currently Amended) A filter, comprising:

a first integrator including a first transconductance circuit, which performs a voltage-current conversion of a difference between a voltage of a filter input terminal and a voltage of a filter output terminal, and a first capacitor; and

a second integrator including:

a second transconductance circuit which performs a voltage-current conversion of a difference between an output voltage of said first integrator and the voltage of said filter output terminal,

a third transconductance circuit, which performs a voltage-current conversion of a difference between the voltage of said filter input terminal and the voltage of said filter output terminal, wherein an output current thereof is added to an output current of said second transconductance circuit, and

a second capacitor, wherein:

said first capacitor is connected between an output terminal of said first transconductance circuit and a ground terminal,

said second capacitor is connected between said filter input terminal and an output terminal of said second transconductance circuit,

the voltage of said filter input terminal is added to the output voltage of said second integrator via said second capacitor, and

~~it is configures so that an output voltage of said second integrator and the voltage of said filter input terminal may be added, and wherein~~

~~an~~ the output terminal of said second transconductance circuit ~~becomes~~ is an output terminal of said filter.

2. (Currently Amended) A filter, comprising:

a first integrator including a first transconductance circuit, which performs a voltage-current conversion of a difference between a voltage of a filter input terminal and a voltage of a filter output terminal, and a first capacitor; and

a second integrator including:

a second transconductance circuit which performs a voltage-current conversion of a difference between an output voltage of said first integrator and ~~a~~ the voltage of said filter output terminal,

a third transconductance circuit, which performs a voltage-current conversion of a difference between the voltage of said filter input terminal and the voltage of said filter output terminal, wherein an output current thereof is subtracted from an output current of said second transconductance circuit, and

a second capacitor, wherein:

said first capacitor is connected between an output terminal of said first transconductance circuit and a ground terminal,

said second capacitor is connected between said filter input terminal and an output terminal of said second transconductance circuit,

the voltage of said filter input terminal is added to the output voltage of said second integrator via said second capacitor, and

~~it is configures so that an output voltage of said second integrator and the voltage of said filter input terminal may be added, and wherein~~

~~an~~ the output terminal of said second transconductance circuit ~~becomes~~ is an output terminal of said filter.

3. (Currently Amended) A filter, comprising:

a first integrator including a first transconductance circuit, which performs a voltage-current conversion of a difference between a voltage of a filter input terminal and a voltage of a filter output terminal, and a first capacitor; and

a second integrator including:

a second transconductance circuit which performs a voltage-current conversion of a difference between an output voltage of said first integrator and the voltage of said filter output terminal,

a third transconductance circuit, which performs a voltage-current conversion of a difference between the voltage of said filter input terminal and the voltage of said filter output terminal, wherein an output current thereof is added to an output current of said second transconductance circuit,

a fourth transconductance circuit, which performs a voltage-current conversion of a difference between the voltage of said filter input terminal and the voltage of said filter output terminal, wherein an output current thereof is subtracted from the output current of said second transconductance circuit, and

a second capacitor, wherein:

said first capacitor is connected between an output terminal of said first transconductance circuit and a ground terminal,

said second capacitor is connected between said filter input terminal and an output terminal of said second transconductance circuit,

the voltage of said filter input terminal is added to the output voltage of said second integrator via said second capacitor, and

~~it is configures so that an output voltage of said second integrator and the voltage of said filter input terminal may be added, and wherein~~

~~an~~ the output terminal of said second transconductance circuit ~~becomes~~ is an output terminal of said filter.

4. (Original) The filter according to claim 3 wherein a transconductance value of said third transconductance circuit is larger than a transconductance value of said fourth transconductance circuit.

5. (Original) The filter according to claim 3 wherein the transconductance value of said third transconductance circuit is smaller than the transconductance value of said fourth transconductance circuit.

6. (Currently Amended) A notch filter, comprising:

a first integrator including a first transconductance circuit, which performs a voltage-current conversion of a difference between a voltage of a filter input terminal and a voltage of a filter output terminal, and a first capacitor; and

a second integrator including:

a second transconductance circuit which performs a voltage-current conversion of a difference between an output voltage of said first integrator and the voltage of said filter output terminal,

a third transconductance circuit, which performs a voltage-current conversion of a difference between the voltage of said filter input terminal and the voltage of said filter output terminal, wherein an output current thereof is added to an output current of said second transconductance circuit, and

a second capacitor, wherein:

said first capacitor is connected between an output terminal of said first transconductance circuit and a ground terminal,

said second capacitor is connected between said filter input terminal and an output terminal of said second transconductance circuit,

the voltage of said filter input terminal is added to the output voltage of said second integrator via said second capacitor, and

~~it is configures so that an output voltage of said second integrator and the voltage of said filter input terminal may be added, and wherein~~

~~an~~ the output terminal of said second transconductance circuit ~~becomes~~ is an output terminal of said filter.

7. (Currently Amended) A notch filter, comprising:

a first integrator including a first transconductance circuit, which performs a voltage-current conversion of a difference between a voltage of a filter input terminal and a voltage of a filter output terminal, and a first capacitor; and

a second integrator including:

a second transconductance circuit which performs a voltage-current conversion of a difference between an output voltage of said first integrator and the voltage of said filter output terminal,

a third transconductance circuit, which performs a voltage-current conversion of a difference between the voltage of said filter input terminal and the voltage of said filter output terminal, wherein an output current

thereof is subtracted from an output current of said second transconductance circuit, and

a second capacitor, wherein:

said first capacitor is connected between an output terminal of said first transconductance circuit and a ground terminal,

said second capacitor is connected between said filter input terminal and an output terminal of said second transconductance circuit,

the voltage of said filter input terminal is added to the output voltage of said second integrator via said second capacitor, and

~~it is configures so that an output voltage of said second integrator and the voltage of said filter input terminal may be added, and wherein~~

~~an~~ the output terminal of said second transconductance circuit ~~becomes~~ is an output terminal of said filter.

8. (Currently Amended) A notch filter, comprising:

a first integrator including a first transconductance circuit, which performs a voltage-current conversion of a difference between a voltage of a filter input terminal and a voltage of a filter output terminal, and a first capacitor; and

a second integrator including:

a second transconductance circuit which performs a voltage-current conversion of a difference between an output voltage of said first integrator and the voltage of said filter output terminal,

a third transconductance circuit, which performs a voltage-current conversion of a difference between the voltage of said filter input terminal and the voltage of said filter output terminal, wherein an output current thereof is added to an output current of said second transconductance circuit,

a fourth transconductance circuit, which performs a voltage-current conversion of a difference between the voltage of said filter input terminal and the voltage of said filter output terminal, wherein an output current thereof is subtracted from the output current of said second transconductance circuit, and

a second capacitor, wherein:

said first capacitor is connected between an output terminal of said first transconductance circuit and a ground terminal,

said second capacitor is connected between said filter input terminal and an output terminal of said second transconductance circuit,

the voltage of said filter input terminal is added to the output voltage of said second integrator via said second capacitor, and

~~it is configures so that an output voltage of said second integrator and the voltage of said filter input terminal may be added, and wherein~~

~~an~~ the output terminal of said second transconductance circuit ~~becomes~~ is an output terminal of said filter.

9. (Currently Amended) An all-pass filter, comprising:

a first integrator including a first transconductance circuit, which performs a voltage-current conversion of a difference between a voltage of a filter input terminal and a voltage of a filter output terminal, and a first capacitor; and

a second integrator including:

a second transconductance circuit which performs a voltage-current conversion of a difference between an output voltage of said first integrator and the voltage of said filter output terminal,

a third transconductance circuit, which performs a voltage-current conversion of a difference between the voltage of said filter input terminal and the voltage of said filter output terminal, wherein an output current

thereof is subtracted from an output current of said second transconductance circuit, and

a second capacitor, wherein:

said first capacitor is connected between an output terminal of said first transconductance circuit and a ground terminal,

said second capacitor is connected between said filter input terminal and an output terminal of said second transconductance circuit,

the voltage of said filter input terminal is added to the output voltage of said second integrator via said second capacitor, and

~~it is configures so that an output voltage of said second integrator and the voltage of said filter input terminal may be added, and wherein~~

~~an~~ the output terminal of said second transconductance circuit ~~becomes~~ is an output terminal of said filter.

10. (Currently Amended) An all-pass filter, comprising:

a first integrator including a first transconductance circuit, which performs a voltage-current conversion of a difference between a voltage of a filter input terminal and a voltage of a filter output terminal, and a first capacitor; and

a second integrator including:

a second transconductance circuit which performs a voltage-current conversion of a difference between an output voltage of said first integrator and the voltage of said filter output terminal,

a third transconductance circuit, which performs a voltage-current conversion of a difference between the voltage of said filter input terminal and the voltage of said filter output terminal, wherein an output current thereof is added to an output current of said second transconductance circuit,

a fourth transconductance circuit, which performs a voltage-current conversion of a difference between the voltage of said filter input terminal and the voltage of said filter output terminal, wherein an output current thereof is subtracted from the output current of said second transconductance circuit, and

a second capacitor, wherein:

said first capacitor is connected between an output terminal of said first transconductance circuit and a ground terminal,

said second capacitor is connected between said filter input terminal and an output terminal of said second transconductance circuit,

the voltage of said filter input terminal is added to the output voltage of said second integrator via said second capacitor, and

~~it is configures so that an output voltage of said second integrator and the voltage of said filter input terminal may be added, and wherein~~

~~an~~ the output terminal of said second transconductance circuit ~~becomes~~ is an output terminal of said filter.

11. (Currently Amended) A filter, comprising:

(a) a first integrator including:

a first full differential transconductance circuit which performs a voltage-current conversion of a difference between a voltage of a positive phase filter input terminal and a voltage of a negative phase filter input terminal,

a second full differential transconductance circuit which performs a voltage-current conversion of a difference between a voltage of a positive phase filter output terminal and a voltage of a negative phase filter output terminal, and

a first capacitor; and

(b) a second integrator including:

a third full differential transconductance circuit which performs a voltage-current conversion between a difference of a voltage of a positive polarity output terminal and a voltage of a negative polarity output terminal of said first integrator,

a fourth full differential transconductance circuit, which performs a voltage-current conversion of a difference between the voltage of said positive phase filter input terminal and the voltage of said positive phase filter output terminal, wherein an output current thereof is added to an output current of said third full differential transconductance circuit,

a fifth full differential transconductance circuit, which performs a voltage-current conversion of a difference between the voltage of said negative phase filter input terminal and the voltage of said negative phase filter output terminal, wherein an output current thereof is added to the output current of said third full differential transconductance circuit,

a sixth full differential transconductance circuit which performs a voltage-current conversion of a difference between the voltage of said positive phase filter output

terminal and the voltage of said negative phase filter output terminal, and

a pair of second capacitors, wherein:

said first capacitor is connected between a positive polarity output terminal and a negative polarity output terminal of said second full differential transconductance circuit,

a first of said pair of second capacitors is connected between a negative polarity output terminal of said third full differential transconductance circuit and said positive phase filter input terminal,

a second of said pair of second capacitors is connected between a positive polarity output terminal of said third full differential transconductance circuit and said negative phase filter input terminal,

the voltage of said positive phase filter input terminal is added to the output voltage of a negative polarity output terminal of said second integrator via one of said pair of second capacitors and the voltage of said negative phase filter input terminal is added to the output voltage of a positive polarity output terminal of said second integrator via the other of said pair of second capacitors, and

~~it is configured so that a voltage of a positive polarity output terminal of said second integrator and the voltage of said~~

~~positive phase filter input terminal may be added, and a voltage of a negative polarity output terminal of said second integrator and the voltage of said negative phase filter input terminal may be added as well, and wherein~~

~~a positive~~ the negative polarity output terminal and ~~a negative~~ the positive polarity output terminal of said third full differential transconductance circuit become said positive phase filter output terminal and said negative phase filter output terminal, respectively.

12. (Currently Amended) A filter, comprising:

(a) a first integrator including:

a first full differential transconductance circuit which performs a voltage-current conversion of a difference between a voltage of a positive phase filter input terminal and a voltage of a negative phase filter input terminal,

a second full differential transconductance circuit which performs a voltage-current conversion of a difference between a voltage of a positive phase filter output terminal and a voltage of a negative phase filter output terminal, and

a first capacitor; and

(b) a second integrator including:

a third full differential transconductance circuit which performs a voltage-current conversion between a difference of a voltage of a positive polarity output terminal and a voltage of a negative polarity output terminal of said first integrator,

a fourth full differential transconductance circuit, which performs a voltage-current conversion of a difference between the voltage of said positive phase filter input terminal and the voltage of said negative phase filter input terminal, wherein an output current thereof is added to an output current of said third full differential transconductance circuit with positive polarity,

a fifth full differential transconductance circuit, which performs a voltage-current conversion of a difference between the voltage of said positive phase filter input terminal and the voltage of said negative phase filter input terminal, wherein an output current thereof is added to the output current of said third full differential transconductance circuit with reversed polarity,

a sixth full differential transconductance circuit, which performs a voltage-current conversion of a difference between the voltage of said positive phase filter output terminal and the voltage of said negative phase filter

output terminal, wherein an output current thereof is added to the output current of said third full differential transconductance circuit with positive polarity,

a seventh full differential transconductance circuit, which performs a voltage-current conversion of a difference between the voltage of said positive phase filter output terminal and the voltage of said negative phase filter output terminal, wherein an output current thereof is added to the output current of said third full differential transconductance circuit with reversed polarity,

~~a~~ an eighth full differential transconductance circuit which performs a voltage-current conversion of a difference between the voltage of said positive phase filter output terminal and the voltage of said negative phase filter output terminal, and

a pair of second capacitors, wherein:

said first capacitor is connected between a positive polarity output terminal and a negative polarity output terminal of said second full differential transconductance circuit,

a first of said pair of second capacitors is connected between a negative polarity output terminal of said third full differential transconductance circuit and said positive phase filter input terminal,

a second of said pair of second capacitors is connected between a positive polarity output terminal of said third full differential transconductance circuit and said negative phase filter input terminal,

the voltage of said positive phase filter input terminal is added to the output voltage of a negative polarity output terminal of said second integrator via one of said pair of second capacitors and the voltage of said negative phase filter input terminal is added to the output voltage of a positive polarity output terminal of said second integrator via the other of said pair of second capacitors, and

~~it is configured so that a voltage of a positive polarity output terminal of said second integrator and the voltage of said positive phase filter input terminal may be added, and a voltage of a negative polarity output terminal of said second integrator and the voltage of said negative phase filter input terminal may be added as well, and wherein~~

~~a positive~~ the negative polarity output terminal and ~~a negative~~ the positive polarity output terminal of said third full differential transconductance circuit become said positive phase filter output terminal and said negative phase filter output terminal, respectively.